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Use of tree hollows by a Mediterranean forest carnivore

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ABSTRACT

Although tree hollows seem to be key structures for a wide range of forest mammals, their importance for Mediterranean forest carnivores remain poorly understood. Here we address this issue, by analysing daily resting site use by 21 radio-collared common genet. Tree hollows were used far more frequently during the wet season (October–April; 73.1% of daily locations) than in the dry season (May–September; 47.6%). Nests and underground dens were the second and third most frequently used resting sites, respectively, in both wet (17.5% and 9.4%) and dry (34.1% and 18.3%) seasons. Each individual reused a large percentage of its resting sites (65.7%). Some resting sites (17.3%) were used by more than one individual, but simultaneous sharing was exceedingly rare (0.56% of daily locations). Hollow use probability during the wet season varied little in relation to environmental variables, though there was a tendency to be higher away from riparian habitats (>50 m) and to be lower in sites with very high shrub cover (>80%). Environmental influences were responsible for more variability in the dry season, when hollow usage was highest in hot days, in days with precipitation, far from riparian habitats, close to sources of human disturbance, in landscapes dominated by continuous forest habitats, and in sites with low shrub cover. Results support the importance of tree hollows for Mediterranean forest carnivores, probably because they provide safe shelter against unfavourable weather, predators and human disturbance. However, results also revealed the importance of riparian trees, which offer support for building nests close to sources of water and food during the dry season. Considering home range size and the average number of hollow-bearing trees used by each genet, we recommend that management of cork and holm oak forests should strive to safeguard at least 4.6 hollow-bearing trees per 100 ha, while simultaneously maintaining large riparian trees. This will improve the resting habitat for common genets, while presumably favouring also other Mediterranean carnivores.

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1. Introduction

Tree hollows provide shelter for a range of forest mammals and thus appear to be an essential resource for the persistence of many species (Gibbons and Lindenmayer, 2002; Banks et al., 2011). This resource is declining due to modern forestry, which reduces the availability of large and old trees with cavities (Gibbons et al., 2008; Ranius et al., 2009). There is thus increasing interest in understanding how mammals use tree hollows, and how the shortage of hollows can limit their populations (Lindenmayer et al., 2012a). This information is essential for the sustainable management of forests, if these are to maintain habitat conditions

for hollow-dependent species (Gibbons et al., 2008; Manning et al., 2013).

Although many mammals are associated with tree hollows in natural forests, in at least some circumstances they may be able to persist despite reductions in hollow availability. For instance, den sharing in social mammals may overcome, at least partly, the shortage of hollows in managed forests (Banks et al., 2013). This strategy may be more difficult for solitary mammals such as most carnivores, where each hollow is generally used by a single individual at a time, with the exception of male and female pairs during the mating season, and of females with its cubs (Zielinski et al., 2004). In forest carnivores it is thus possible that shortage of hollows can be overcome through flexible behaviour allowing animals to use different types of resting sites. At present, however, information is still scarce on the flexibility of rest site use by forest solitary carnivores, and what factors influence such flexibility.

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